

CLAIMS

What is claimed is:

1. A spindle motor, with a shaft, for a hard disc drive, comprising:
 - a base;
 - a thrust plate mounted on the base forming bearing clearances with respect to the shaft, and supporting the shaft in a thrust direction;
 - a sleeve accommodating the shaft, forming bearing clearances between an inner circumferential surface of the sleeve and an outer circumferential surface of the shaft, and supporting the shaft in a radial direction when the shaft is rotated;
 - a starter core mounted at an outer side of the sleeve;
 - a hub, to which the shaft is fixed, having an assembly of a yoke and a magnet at a position corresponding to the starter core producing electromagnetic forces through interactions with the starter core;
 - an oil inlet at one side of the sleeve through an outer circumferential surface to the inner circumferential surface of the sleeve, and through which oil is provided into the bearing clearances; and
 - an oil outflow prevention unit installed at an inner side of the oil inlet preventing the oil from flowing out through the oil inlet, but allowing an outflow of air bubbles generated due to gasification of the oil, while the shaft is rotated.
2. The spindle motor according to claim 1, wherein the oil outflow prevention unit includes a membrane mounted at the oil inlet.
3. The spindle motor according to claim 2, wherein the membrane is mounted to the oil inlet using adhesives.
4. The spindle motor according to claim 1, wherein the oil outflow prevention unit includes:
 - a locking member having an opening at the center thereof, and a plurality of locking holes located along a circumferential direction thereof;

a fixing member having an opening at the center thereof, and a plurality of protrusions located along a circumferential direction thereof, engageable with the plurality of locking holes; and

a filtering member between the locking member and the fixing member, having a membrane provided at a center thereof, and a plurality of perforations along a circumferential directions thereof, through which the protrusions are passed,

wherein the locking member, the filtering member, and the fixing member are assembleable with each other, and the assembly is fixedly engageable with a hooking member provided at an inner side of the oil inlet.

5. The spindle motor according to claim 4, wherein the locking holes and the protrusions have cone-shaped cross sections.

6. The spindle motor according to claim 4, wherein the locking member has a cylindrical shape, and the opening at the center thereof is substantially circular.

7. The spindle motor according to claim 4, wherein the locking member is a flange.

8. The spindle motor according to claim 4, wherein the plurality of protrusions are located at predetermined intervals.

9. A spindle motor, with a shaft, for a hard disc drive, comprising:

a base;

a thrust plate mounted on the base, forming bearing clearances with respect to the shaft, and supporting the shaft in a thrust direction;

a sleeve accommodating the shaft, forming bearing clearances between a inner circumferential surface of the sleeve and an outer circumferential surface of the shaft, and supporting the shaft in a radial direction when the shaft is rotated;

an oil inlet through the sleeve and through which oil is provided into the bearing clearances; and

an oil outflow prevention apparatus installed at an inner side of the oil inlet preventing the oil from flowing out through the oil inlet, but allowing an outflow of air bubbles generated due to gasification of the oil, while the shaft is rotated.

10. The spindle motor according to claim 9, wherein the oil outflow prevention apparatus includes a membrane mounted at the oil inlet.

11. The spindle motor according to claim 10, wherein the membrane is mounted at the oil inlet using an adhesive.

12. The spindle motor according to claim 9, wherein the oil outflow prevention apparatus includes:

a locking member having an opening at a center thereof, and a plurality of locking holes formed along a circumferential direction thereof,

a fixing member having an opening at the center thereof, and a plurality of protrusions formed along a circumferential direction thereof, engageable with the plurality of locking holes, and

a filtering member between the locking member and the fixing member, having a membrane provided at the center thereof, and a plurality of perforations along circumferential directions thereof, through which the protrusions can be passed,

wherein the locking member, the filtering member, and the fixing member are assembleable with each other, and the assembly is fixedly engageable with a hooking member provided at the inner side of the oil inlet.

13. The spindle motor according to claim 12, wherein the locking holes and the protrusions have cone-shaped cross sections.

14. An oil outflow prevention apparatus for a spindle motor, having an oil inlet and a fluid dynamic bearing, comprising:

a locking member having an opening at a center thereof, and a plurality of locking holes formed along a circumferential direction thereof;

a fixing member having an opening at a center thereof, and a plurality of protrusions formed along a circumferential direction thereof, engageable with the plurality of locking holes, and

a filtering member between the locking member and the fixing member, having a membrane provided at the center thereof, and a plurality of perforations along circumferential directions thereof, through which the protrusions are passable.

15. The oil outflow prevention apparatus according to claim 14, wherein the locking member, the filtering member, and the fixing member are assembleable with each other, and the assembly is fixedly engageable with a hooking member provided at an inner side of the oil inlet.

16. The oil outflow prevention apparatus according to claim 15, wherein the locking holes and the protrusions have cone-shaped cross sections.

17. An oil outflow prevention apparatus for a spindle motor with a shaft, having an oil inlet and a fluid dynamic bearing, comprising:

a membrane installed at an inner side of the oil inlet, preventing the oil from flowing out through the oil inlet, but allowing an outflow of air bubbles generated due to gasification of the oil, while the shaft is rotated.

18. The oil outflow prevention apparatus according to claim 17, wherein the membrane is mounted to the oil inlet using an adhesive.

19. The oil outflow prevention apparatus according to claim 18, wherein the adhesive is applied to an edge of the membrane or applied to a border of an entrance of the oil inlet.

20. The oil outflow prevention apparatus according to claim 18, wherein the adhesive is a double-sided adhesive tape.